THE

# NATURAL HISTORY

OF

# BRITISH FISHES,

INCLUDING

SCIENTIFIC AND GENERAL DESCRIPTIONS

OF THE

MOST INTERESTING SPECIES,

AND AN

*EXTENSIVE SELECTION*

OF

ACCURATELY FINISHED COLOURED PLATES.

TAKEN ENTIRELY FROM

ORIGINAL DRAWINGS,

PURPOSELY MADE FROM THE SPECIMENS IN A RECENT STATE,
AND FOR THE MOST PART WHILST LIVING.

*VOL. I.*

BY E. DONOVAN, F.L.S.
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INSECTS, SHELLS, &c.

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# ADVERTISEMENT.

THE present Volumes are submitted with deference to the Public taste as a splendid illustration of the Ichthyology of Great Britain; and as a work, which, from the interest of its nature, and extent of design, no less than the superiority of its embellishments, may be considered as a valuable addition to the library of the English reader.

This work contains a descriptive account of those fishes which are usually denominated natives of the British Isles, either from constantly residing in our streams, and rivers; our seas, and the vicinities of our coasts, or those occasional wanderers from other climates, which either visit us at stated seasons, or are accidentally discovered near our shores.—The author has throughout endeavoured to render it a work of general utility both to the scientific and general reader, and as he trusts, not altogether without success. The plates have also been executed with the utmost care, and it is apprehended will not be found in any respect inferior to those included in either of his former Zoological undertakings. Those embellishments indeed form no inconsiderable portion of the present work; as they consist altogether of one hundred and twenty plates, the whole of which are correctly finished in colours

in imitation of the original drawings; which latter, with few exceptions, it should be observed, were taken from living or recent examples of the respective fishes for the express purpose of this publication.

The outline of our design is sufficiently developed in the foregoing observations, but it may still be necessary to enter into a further explanation:—something more than a general notice of its leading object will be naturally expected as an introduction to an undertaking of such an extensive nature. With respect to the general merits of its execution the author will forbear adducing any observation. The progressive manner in which it has been brought before the Public must have enabled every reader to form his own conclusion on that subject, and it is not therefore for the author to interfere in their decision, whether favourable to his endeavours, or otherwise. He may nevertheless be allowed to mention, that the attention it has obtained was sufficiently flattering to induce him to extend the work to its present bulk, or at least to add the fifth volume to the four originally proposed; and this he is inclined to think may be considered as some criterion of public countenance and approbation.

When the author first conceived the idea of producing a work on British Fishes in part of his engagements to elucidate the Natural History of the country, the difficulty of procuring the subjects requisite for such a work seemed to present an insurmountable obstacle to the undertaking. He clearly saw the impropriety of proceeding a single step till he became possessed of the whole, or greater part of them. But in this instance he was content to solicit the

kind communications of those friends of science who had favoured him with subjects in other departments; and who, from their local situations in various parts of the country, might be enabled to assist him. But in this particular branch of Natural History it must be acknowledged their best endeavours proved ineffectual: the number of species so procured were inconsiderable, and it became necessary to visit those coasts where the more rare and local kinds are sometimes found, in order to possess them.

This task was not exempt from difficulty; it was not enough to visit those coasts, but to seek the objects in request in the depths and recesses of the ocean; and in the accomplishment of which he could only avail himself of such opportunities of venturing to sea as the accommodation of the fishing craft, or open boats of such remote and unfrequented places, would allow. Those, it may be conceived, were not at all times calculated for comfort or even convenience, nor wholly free from peril. This mode of procuring the specimens proved, however, in the end, successful; in the space of a few months, devoted at different periods to this purpose, many extremely scarce and curious articles were obtained, not only of the Ichthyology kind, but in every other class of marine productions: and with repect to the fishes of the country in particular, it afforded the best, if not the only means of ascertaining with accuracy the precise characters of those perishable beings. By this means also the author was enabled to delineate a variety of the more brilliant species in the highest state of perfection, and while they yet glowed with the vivid hues of life. This was assuredly a

matter of serious importance, as it is obviously known that nothing can be more fugitive in general than the colours of the more resplendent creatures of this tribe, many of which while alive and vigorous display the most fascinating emanations of colour; but snatched from their native element, those fervid hues alternately fade and revive with the transitory struggles of life, and, evanescent as their breath, are lost entirely in the expiring gasp of death.

The Public will be aware of the advantages which materials so collected have afforded the author in perfecting his design. Those who have hitherto treated on British Fishes, however respectable, it is not to be denied, have sometimes been induced to describe species they have never seen, or ascertained from sufficient authority; and errors have been thus foisted upon the public, without perhaps any latent motive for imposing on them, Of the danger resulting from this, the author was so fully convinced in the outset of the present work, that he proposed to omit every kind which had not fallen under his own immediate observation, and of which examples even did not remain in his Museum, in order to remove every doubt of scepticism as to the actual existence of such splendid and unusual creatures. To this intention he has invariably adhered throughout, with the solitary exception of a single fish, the *Cyclopterus Montagui* *, represented, as will appear in the body of the work, on the authority of a drawing, communicated from a very respectable friend;

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* Plate 68.

and which, as the specimen itself could not be obtained, was thought sufficiently interesting to justify such a deviation from our first resolution.

At the commencement of the publication of this work in parts, the number of fishes in preparation was stated at about one hundred subjects. This extensive number, it was understood, included all the more common and abundant kinds of fishes, in addition to such a selection of the rarer species as had been procured through the exertions of the author and the medium of his friends. Possessing those, the work was undertaken with the design of being comprised in four volumes, or in the event of obtaining a further number, and the publication itself being favourably received, a fifth volume was intended to be added, in order to include the remainder. The addition of a fifth volume has been made accordingly; but in the course of time elapsed since the publication began, the author has so considerably enriched his collection with new acquisitions, that even this was found inadequate to comprise the whole. The number of those latter additions amount altogether to above thirty species; and in order to include them in the work without exceeding the utmost limits proposed, it was conceived advisable to exclude some of the most familiar fishes of our markets, and insert those rarities in place of them. This will sufficiently explain the cause of several omissions of the common kinds of fishes in the present publication, and will unquestionably be considered a peculiar advantage, the work itself being thus rendered more copious in point of rare and beautiful subjects than it could otherwise have been. It must be concluded, that the omission of the *common Eel*, the

*Salmon*, and the *Sprat*, is amply compensated by the insertion of the *Toothed Gilt-head*, the *Opah*, and *Saury Pike*; and that the *Starry Ray* and *Salvelian Charr*; or the *Trumpet Fish*, and *variegated Sole*, will certainly be admitted as interesting equivalents for the *common Skate* and the *Herring*.

The works that have hitherto appeared professedly on the subject of British Ichthyology are very few. Among the principal of those may be mentioned the *Icones Piscium* of Albin, an inconsiderable work, but one of remote date; the *Catalogues* of Ray, and *Piscium Anglicorum* of the same author; the *Ichthyological Observations* to be found in the Miscellaneous Works of Dale, and Borlase; a few detached *papers* in the Transactions of the Royal Society; that curious production, the *Complete Angler* of old Walton; and the third volume of Mr. Pennant's *British Zoology*. It may be superfluous to add, that neither of those are on the same plan as the present illustration.

The following systematic arrangement of the British Fishes included in this work will serve more fully to explain its nature and contents:

## SYSTEMATIC ARRANGEMENT.

### APODES.

## JUGULARES.



## THORACICI.

## ABDOMINALES.

## BRANCHIOSTEGI.

| | Plate |
|---|---|
| Cyclopterus Lumpus, Lump sucker, or Lump fish | 1 |
| Cyclopterus liparis, Unctuous Sucker | 47 |
| Cylopterus ocellatus, Ocellated Sucker | 76 |
| Cyclopterus bimaculatus, Bimaculated Sucker | 78 |
| Cyclopterus Montagui, Diminutive Sucker | 68 |
| Lophius Piscatorius, Fishing Frog, or Common Angler | 101 |

CHONDROPTERYGII.

| | |
|---|---|
| Acipenser Sturio, Common Sturgeon | 65 |
| Chimera monstrosa, Sea Monster | 111 |
| Squalus Catulus, Lesser Spotted Dog-fish | 55 |
| Squalus Cornubicus, Porbeagle Shark | 108 |
| Squalus Acanthias, Spine-backed Shark | 82 |
| Squalus Squatina, Angel Shark | 17 |
| Raja Torpedo, Electric Ray | 53 |
| Raja miraletus, Mirror Ray | 103 |
| Raja rubus, Rough Ray | 20 |
| Raja Pastinaca, Sting Ray | 99 |
| Raja clavata, Thornback | 26 |
| Raja radiata, Starry Ray | 114 |
| Petromyzon marinus, Great, or Sea Lamprey | 81 |
| Petromyzon fluviatilis, Lesser Lamprey | 54 |

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In the above arrangement we have adhered to the Linnæan mode of classification, and of course excluded the *cetaceous mammalia*, or animals of the whale kind, from the class of fishes, to which some writers erroneously refer them.

From the enumeration of those fishes it will be found, that many species are introduced into the present work which have not been before recorded as natives of the country, and others that are perfectly undescribed. It

will be furthermore perceived, that, independently of a few of the more abundant kinds of the fish tribe, which, as already intimated, were purposely omitted, others, considered rare, and described as such by several writers, have been excluded. The latter omissions, we feel some gratification in stating, have rarely arisen from the want of the particular subjects intended, or even in many instances the individual specimens, or drawings, to which the respective writers refer, but because there appeared some weighty or sufficient reason for believing them inadmissible into a work of this nature.

There is indeed too much cause to apprehend, that our best historians on the subject of British Ichthyology have suffered themselves in various instances to be misled, and from the want of opportunity, or inclination in their successors to investigate the truth, the mistakes of one writer have become confirmed by the subsequent testimony of others; and thus varieties, or even species, are established, which have existence only in the writings of the authors by whom they are described. Errors of this kind are immediately within our knowledge, and which we cannot hesitate to consider of such serious moment as to require particular mention in this place. We really disclaim every allusion to the general veracity of the respectable writers involved in this explanation, but feel at the same time that we ought not, consistently with our desire of promoting science, lend our countenance to error when it remains in our power to correct it.

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From the time even of the illustrious Ray it is strongly suspected that some few of the errors alluded to have

obtained their currency. There are two or three ambiguous fishes described by that author, but of which at this remote period we can procure no very correct information. We can neither comprehend the *Cook* cornubiensium (or Labrus Coquus) of that writer, nor the "*Black Fish*" of his friend Mr. Jago, the minister of Loo.—Perhaps the observations of future naturalists on the Cornish coasts may confirm the accuracy of those writers; we only mean to infer, that they are either obscurely described, or fishes unknown to us.—The "*Long Fishing Frog*" of Mount's Bay, an account of which is given by Dr. Borlase in the Natural History of Cornwall, we are not at present acquainted with; but are inclined to think the description might be taken from a dried example of the common Angler, which would assume the linear appearance he describes;—and the *Latern Sole* of Borlase is also another fish we have never seen.

The author of the British Zoology introduces all the species abovementioned on the authority of Ray and Borlase, and it is not without regret we may add, has included others on less authentic observation. The *Trifurcated Hake* of this writer, communicated, as his work informs us, by the Rev. Mr. Hugh Davies, of Beaumaris, we have been enabled to testify, on the most indubitable authority, is not in being;—the description was taken from a damaged skin of the forked Hake, which latter is also described by the same author, who thus constitutes two species of the same fish *. The *Beaumaris*

* Vide Donov. Tour of South Wales and Monmouthshire; wherein the circumstances attending the origin of this error is detailed at length on the authority of the Rev. Mr. Hugh Davies.

*Shark* of Pennant is also the same species as his *Porbeagle* *; and his *Ballan Wrasse* †, a variety only in colour of his *ancient Wrasse*, by which means two other supposed species are erroneously added to the tribe of fishes.—We are furthermore persuaded, that the little fish called the *Morris* in the British Zoology (which first obtained a place in the works of Gronovius, and since that time in the *Gmelinian Systema*, as a new genus, under the title of LEPTOCEPHALUS) is by no means correctly ascertained. From an example in our Museum, and an acquaintance with the peculiar circumstances under which Mr. Pennant describes it, we are pretty well convinced it will eventually prove to to be nothing more than a young and mutilated example of the Blennius gunnellus ‡. The *White Bait* is also ascertained to be neither the young of the common Bleak, nor a distinct species allied to it, as Mr. Pennant infers, but clearly the young of the common Shad. Some few other fishes of the Shark and Ray tribe, in the British Zoology, are also confessedly obscure, and will be found, we suspect, on further investigation, to be improperly described as distinct species.

Several material errors, besides the adoption of those above mentioned, occur likewise in the Ichthyological Works of Dr. Shaw. Those to which we allude particularly appeared originally in the Naturalists' Miscellany, and have been of late repeated in the General Zoology

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* See the description of Squalus cornubicus, plate 108.

† See Labrus Tinca, plate 83

‡ A copy of the original drawing, made by Mr. Morris, upon the credit of which Mr. Pennant describes the fish, is in our possession. The specimen was found in the sea, on the coast of Anglesea, near Holyhead, in which place the Blennius gunnellus was formerly very abundant.

of the same author. The *Rosy Flounder* (Pleuronectes roseus) of Dr. Shaw, is certainly only an accidental variety in colour of the common Flounder, examples of which the river Thames affords in amazing number during spring, and summer †. The *Pyramidal Lump-sucker* (Cyclopterus pyramidalis) of the same writer, is only a distorted subject of the common Lump-sucker †; and his *Sparus Formosus*, a fish, not of the Sparus, but Labrus genus, being no other than the *striped Wrasse* of Pennant, and *Labrus variegatus* of Gmelin and other writers †.

The *oblong Sun-fish* of the Leverian Museum was not an authentic specimen, but an ill-preserved skin of the round or common Sun-fish, and which has misled some authors so far as to consider the oblong Sun-fish a mere variety of the other.

We could have wished also, that Dr. Turton, who has favoured the English reader with a valuable and useful translation of the Gmelinian System, had occasionally consulted the various publications, from whence his additions to that work were selected, with greater caution; for by inserting those, the species have, in some instances, been improperly multiplied, Gmelin having before described the same fishes under other names. A striking example of this occurs in the genus Gadus, to which Dr. Turton adds as a new species the Scotch Torsk of Pennant, under the trivial appellation of *Scoticus*, not being aware that the same species is immediately before described by

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††† The specimens described by Dr. Shaw, formerly preserved in the Leverian Museum, are at present in the collection of the author.

his author under the name of *Brosme* *, and by this means two kinds of the Torsk are described, though in reality they are both the same fish. Dr. Turton, it should be added likewise, admits the whole of the before-mentioned exceptionable fishes as distinct and genuine species.

We could still proceed further, but what has been advanced already may be sufficient to show, that some few of the remaining ambiguous kinds of British fishes, recorded by different writers, when attentively examined, may prove to have no better claim to the distinction of species than those already mentioned, and that it is therefore better to pass over such in silence than involve ourselves in similar errors by introducing any account of them. The amount of those ambiguous fishes, which we have had no opportunity of examining, may be stated altogether at about eight or ten species.

As a sequel to our remarks, we can only repeat our former assurances that our motive for noticing the above circumstances arose entirely from the considerations imposed on an impartial investigation of facts, which cannot, we are of opinion, be too generally known to the Naturalists of this country, and even of Europe, in order to enable them to form a correct idea of the native products of the British isles, in this important department of nature.—It is not without regret we are compelled to make such a material reduction from the *British Fauna;* it would have proved, on the contrary, a source of infinitely greater satisfaction could we have been enabled to encrease its number in the

* See our description of Gadus Brosme, plate 70.

same proportion we are obliged to reduce it; but we are satisfied of its necessity, and must in truth submit. Our assertions have not been incautiously advanced: they are the result of mature deliberation, and authentic evidences; our inferences being for the most part taken from the original drawings and manuscripts, to which those very writers were indebted for their information, or from the individual specimens described in different collections, which have been since concentrated in our possession, and at present constitute a part of our own Museum.

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THE

# NATURAL HISTORY

OF

# BRITISH FISHES.

## PLATE I.

### TRIGLA HIRUNDO.

### *SAPPHARINE GURNARD.*

### * *THORACICI.*

GENERIC CHARACTER.

Head large, mailed, with rough lines. Eyes large, round, placed vertically. Mouth large. Palate and jaws armed with sharp teeth. Nostrils double. Gill-cover, a single piece, radiated and spined. Seven rays in the gill-membrane. Body wedge-shaped, and covered with small scales. Back straight, with a longitudinal groove serrated on the margins. Lateral line nearer the back, and straight. Abdomen thick. Ventral and pectoral fins large, with articulated appendages before them.

# PLATE I.

## SPECIFIC CHARACTER

AND

## SYNONYMS.

Three appendages. Lateral line prickly. Pectoral fins large, green and blue.

TRIGLA HIRUNDO: digitis ternis, linea laterali aculeata. *Gmel. Linn. Syst. Nat. p.* 1344. *Sp.* 6.—*Müll. prodr. Zool. dan. p.* 47. *n.* 400.—*Fn. Sv.* 340.—*It. Wgoth. p.* 176.

Trigla capite aculeato, appendicibus utrinque tribus ad pinnas pectorales. *Art. gen.* 44. *syn.* 73.

Hirundo prior. *Aldr. pisc. p.* 135.

Tubfish. Cornub. *Wil. Icth.* 280.—*Raii. syn. pisc.* 88.

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Few genera of the fish tribe are more distinguished by a peculiar brilliancy of colours than that of Trigla in general. Of this genus we have five species on our coasts, and of those the Sappharine Gurnard is certainly the most remarkable, if not the most beautiful. This kind is, in particular, distinguished by the magnitude of the pectoral fins, which, when expanded, might seem capable of supporting it in such little aërial flights as some kinds of fishes are known to undertake when pursued by enemies in their native element.

The first dorsal fin consists of nine rays, the second of seventeen, the pectoral fin of nine, ventral six, anal fourteen, and caudal sixteen.

This species is found on the southern shores of Wales; and we have also seen it from Devonshire. It is usually from ten to eighteen inches in length.

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# PLATE II.

## GADUS TRICIRRATUS.

### *THREE BEARDED COD, OR ROCKLING.*

### ** *JUGULARES.*

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegeous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Three beards: first dorsal fin obsolete: body spotted.

GADUS TRICIRRATUS: cirris tribus, pinna dorsali priore exsoleta, corpore maculato.

GADUS MUSTELLA β. *Gmel. Linn. Syst. Nat. p.* 1174. *sp.* 25.

Mustella vulgaris. *Rondel.* 281. *Gesn. pisc.* 89.

Sea Loche *Cestriæ*, Whistle fish *Cornubæ*. *Will. Icth.* 121. *Raii. syn. pisc.* 67.

Rockling, Jago. *Raii. syn. pisc.* 164. *fig.* 9.

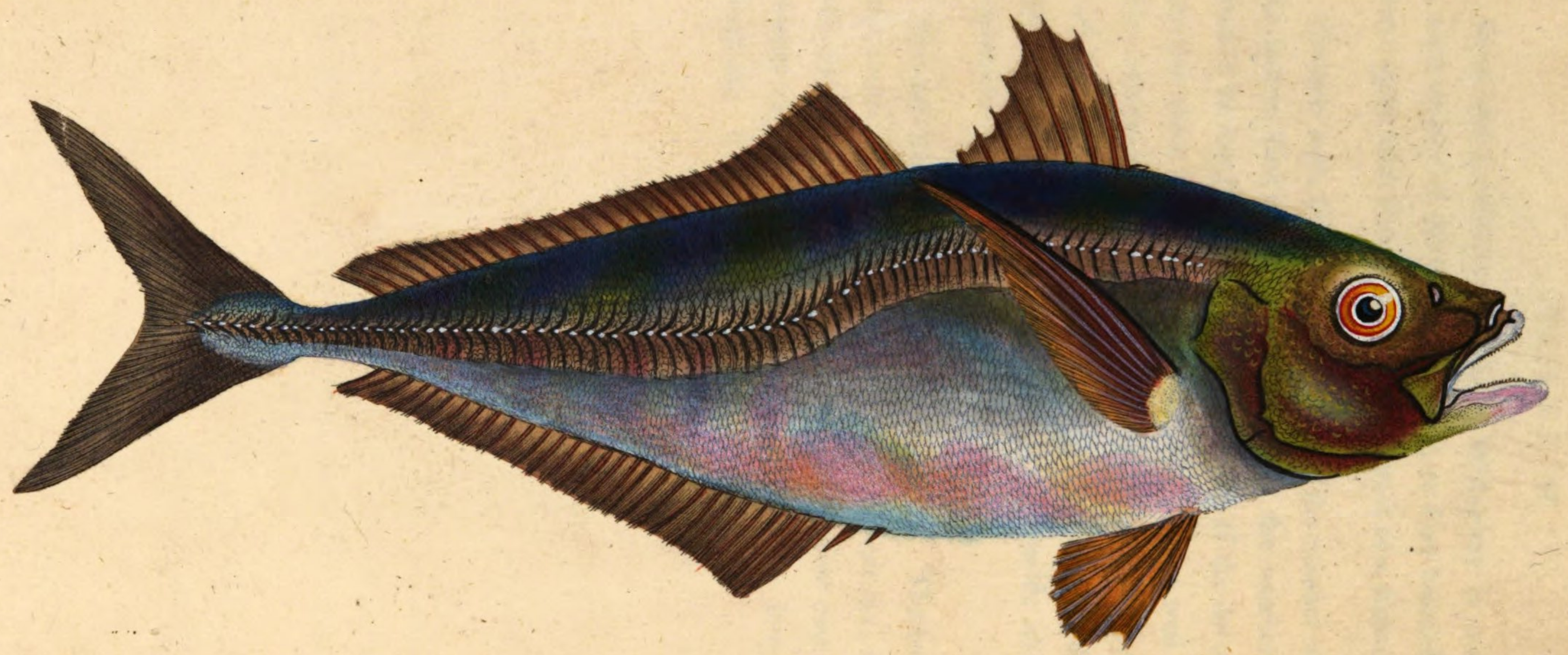
Three bearded Cod. *Penn. Br. Zool. p.* 201. *sp.* 87.

## PLATE II.

Bloch and Gmelin have followed Willughby in making this kind a mere variety of the Gadus Mustella, or Five bearded Cod; but we must agree with Pennant, who considers it as a distinct species.

Pennant says, he has always observed the number of the beards in the spotted kind not to exceed three, nor the number in the brown kind to be less than five; that the first ray of the dorsal fin is longer, and that there is some difference in the form as well as colour; the Five bearded Cod being thicker in proportion than the other. Having both kinds before us, we cannot hesitate to believe they are distinct species, and have assigned the present a specific character in consequence.

Our specimen is fifteen inches in length. The branchiostegeous rays seven. In the first dorsal fin, one distinct ray, the rest minute and numerous. Second dorsal fin of fifty-four rays. Pectoral fin twenty rays. Ventral fins fleshy; second ray longest. Anal fin forty-six. Tail twenty-four.



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# PLATE III.

## SCOMBER TRACHURUS.

### *SCAD.*

### * *THORACICI.*

GENERIC CHARACTER.

Head compressed, smooth. Branchiostegeous membrane of seven rays. Body smooth. Lateral line carinated behind. Generally some spurious fins near the tail.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dorsal spine recumbent, lateral line a series of spinous plates.

SCOMBER TRACHURUS: spina dorsali recumbente, linea laterali loricata. *Gmel. Linn. Syst. p.* 1335. *sp.* 6. *Amoen. Acad.* 4. *p.* 249.

Scomber linea laterali squamis latis pinnata.

Scad, Horse-Mackrell. *Will. Icth.* 290. *Raii. syn. pisc.* 92.

SCAD. *Penn. Br. Zool. p.* 269. *sp.* 134.

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A specimen of this scarce fish was taken upon the western coast in the month of June; that which Mr. Pennant saw, was taken in October.

## PLATE III.

The first dorsal fin contains eight strong rays, the second forty-two rays, the pectoral fin twenty, ventral fin seven, anal fin forty, and in the tail twenty-two rays.

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# PLATE IV.

## TRIGLA LINEATA.

### *STREAKED GURNARD.*

### * *THORACICI.*

#### GENERIC CHARACTER.

Head large, mailed, with rough lines. Eyes large, round, placed vertically. Mouth large. Palate and jaws armed with sharp teeth. Nostrils double. Gill-cover, a single piece radiated and spined. Seven rays in the gill-membrane. Body wedge shaped, and covered with small scales. Back straight, with a longitudinal groove serrated on the margins. Lateral line nearer the back, and straight. Abdomen thick. Ventral and pectoral fins large, with articulated appendages before them.

#### SPECIFIC CHARACTER

AND

#### SYNONYMS.

Striated transversely, red; beneath white.

TRIGLA LINEATA: striata rubra, subtus alba. *Linn. Syst. Nat. Gmel. p.* 1345. *sp.* 12.

Cuculus lineatus. The Streaked Gurnard. *Raii. syn. pisc.* 165. *fig.* 11.—*Penn. Br. Zool.* 3. *p.* 236. *n.* 5.

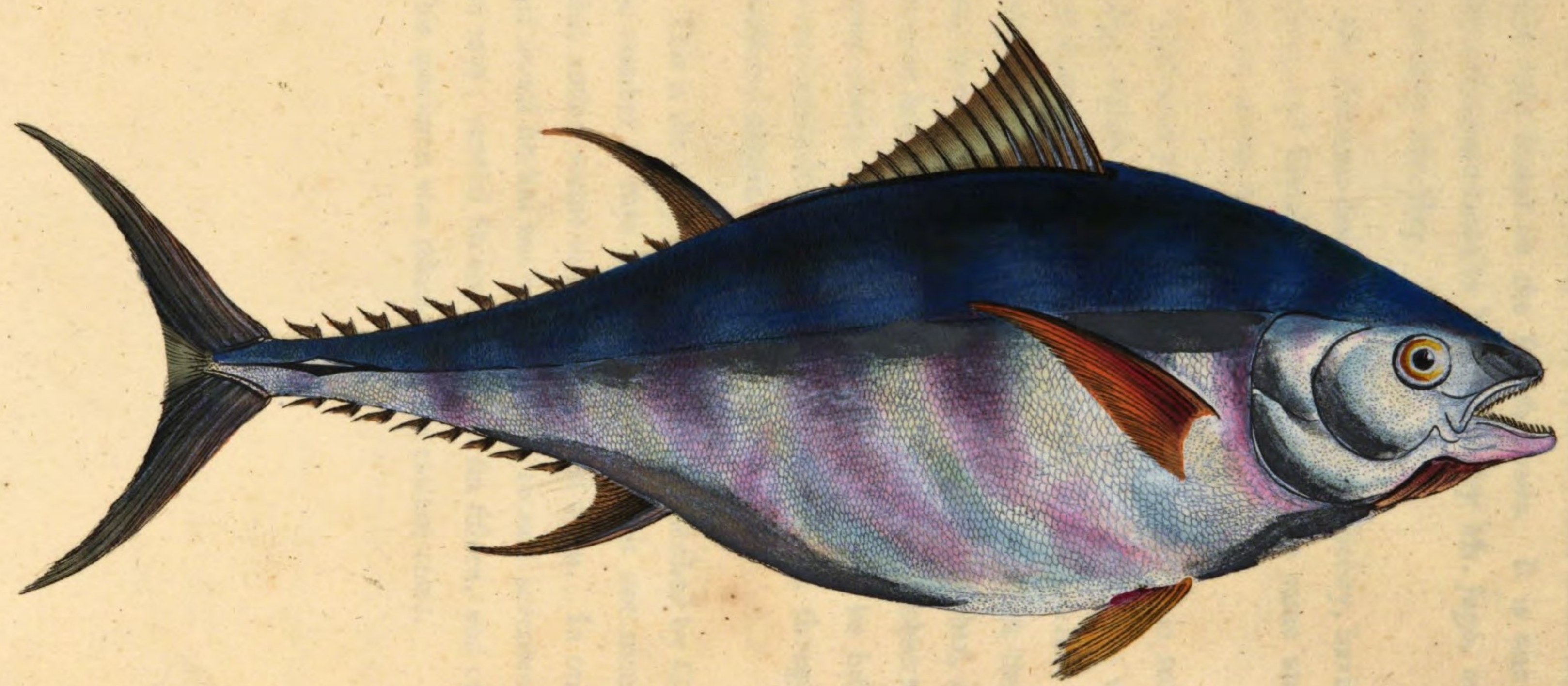
## PLATE IV.

This is an extremely rare species; and hitherto, it appears, has been only found on the British coasts. It is one of the Cornish fishes communicated to Mr. Petiver by Mr. Jago, and described and figured by Mr. Ray.

Mr. Pennant describes it upon this authority, having only seen the figure, and Gmelin arranges it from the same authors as a new species, under the name of Lineata.

The most prevalent colour of our specimen is red, except on the belly, which is white. The transverse streaks are very remarkable, and at once distinguish it from the other species: they consist of little thread-like ridges, that pass from the back through the lateral line, in a direction nearly parallel with each other, and become ramose or branching upon the belly. Pennant observes, that by the figure above quoted, the nose seems not to be bifurcated, which, in our specimen, is particularly characteristic, though the spines are small and obtuse.

This is the only species of Trigla, described by Gmelin, in which the number of rays in the fins and tail is not mentioned; and no other author seems to have ascertained them. In our specimen, the first dorsal fin has ten rays, and the second seventeen; pectoral fins ten rays; ventral fin six rays; anal fin fifteen, and caudal sixteen.—This specimen was taken upon the eastern coast.



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# PLATE V.

## SCOMBER THYNNUS.

### *TUNNY.*

### * *THORACICI.*

#### GENERIC CHARACTER.

Head compressed, smooth; branchiostegeous membrane of seven rays. Body smooth; lateral line carinated behind. Generally some spurious fins near the tail.

#### SPECIFIC CHARACTER.

Eight spurious fins on the back, and an equal number on the belly.

SCOMBER THYNNUS: pinnulis utrinque octo. *Gmel. Linn. Syst. Nat. p.* 1330. *sp.* 3.

Scomber pinnulis 8 seu 9. in extremo dorso, sulco ad pinnas ventrales. *Art. gen.* 31. *syn.* 49.

Thunnus. *Rondel.* 241.—*Gesn. pisc.* 957.

Tunny fish, or Spanish Mackrell. *Wil. Icth.* 176.—*Raii. syn. pisc.* 57.—*Sibbald Scot.*

Tunny. *Penn. Br. Zool. p.* 266. *sp.* 133.

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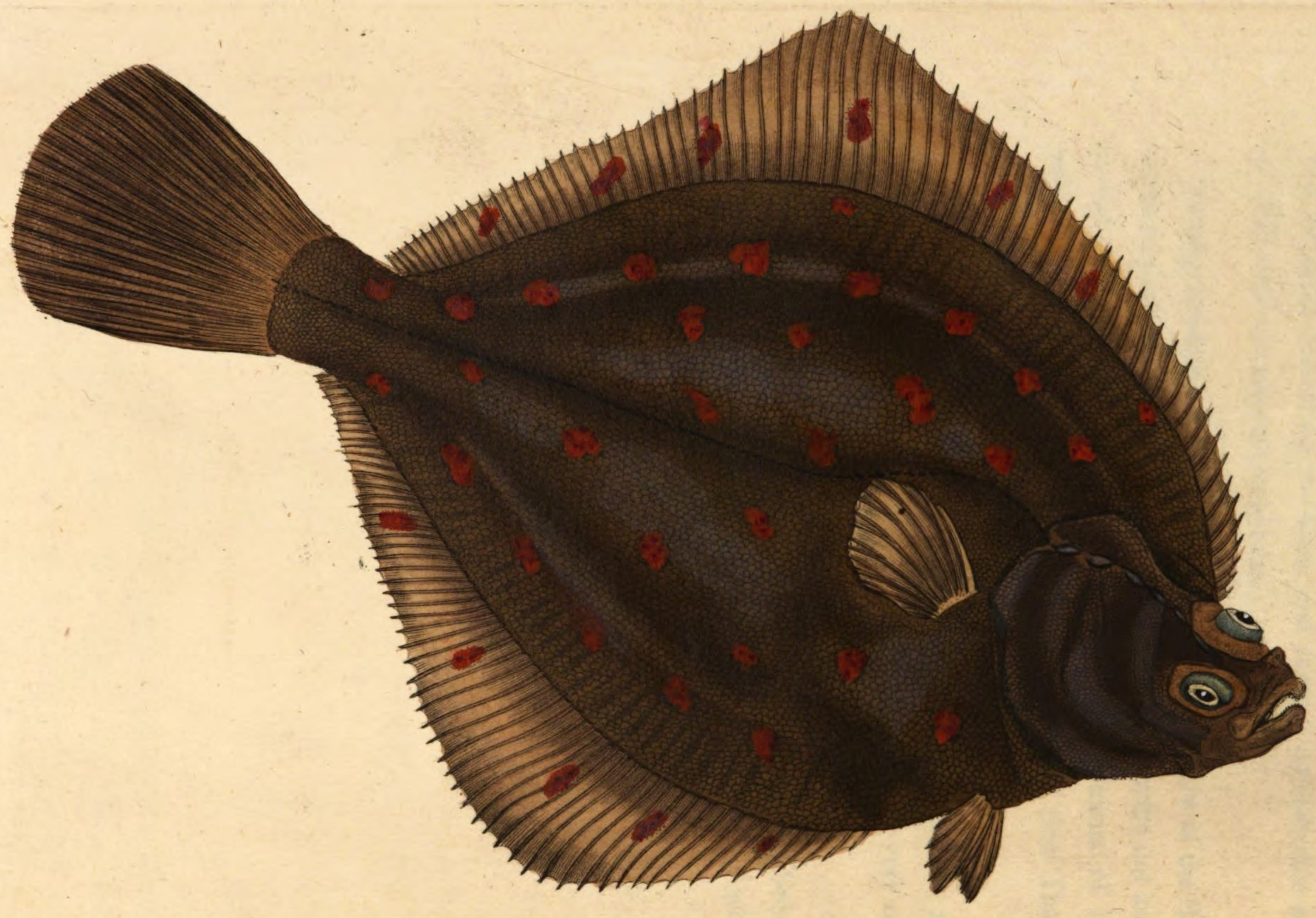
This is a very generally diffused species, being found in different seasons in all parts of the world. They enter the Mediterranean sea in immense shoals, swimming with great swiftness, forming a

regular parallelogram, and making a loud hissing noise. On the coasts of Sicily there are established fisheries for the Tunny, where they are taken and salted, or dried, and form a considerable article of trade with the adjacent kingdoms.

Tunnies sometimes frequent the most northern parts of the British coasts in pursuit of herrings, but not in shoals; and were not known to visit the southern parts of the kingdom till the summer of 1801, when three were captured near the entrance of the river Thames, and brought to Billingsgate market for sale.

The usual length of this species is about two or three feet; those of six or seven feet in length are not common, and it is very rarely that they exceed ten feet.

The flesh is tolerable: when raw, it looks like beef, but becomes of a much paler hue in boiling. Its flavour is between that of salmon and mackrel, though certainly inferior to either.



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# PLATE VI.

## PLEURONECTES PLATESSA.

### *PLAISE.*

### * *THORACICI.*

GENERIC CHARACTER.

Head small. Eyes spherical, both on the same side of the head, and near each other. Mouth arcuated. Jaws dentated, unequal. Gill-membrane with from four to seven rays. Gill-covers of three plates in general. Body compressed, carinated; upper side sub-convex: beneath flat and pale. Vent near the head.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body smooth, a row of six tubercles on the head.

PLEURONECTES PLATESSA: corpore glabro, tuberculis sex capitis. *Gmel. Linn. Syst. Nat. p.* 1228. *sp.* 6.

Plaise. *Will. Icth.* 96.—*Raii. syn. pisc.* 31.—Plaise. *Penn. Br. Zool. p.* 228. *sp.* 103.

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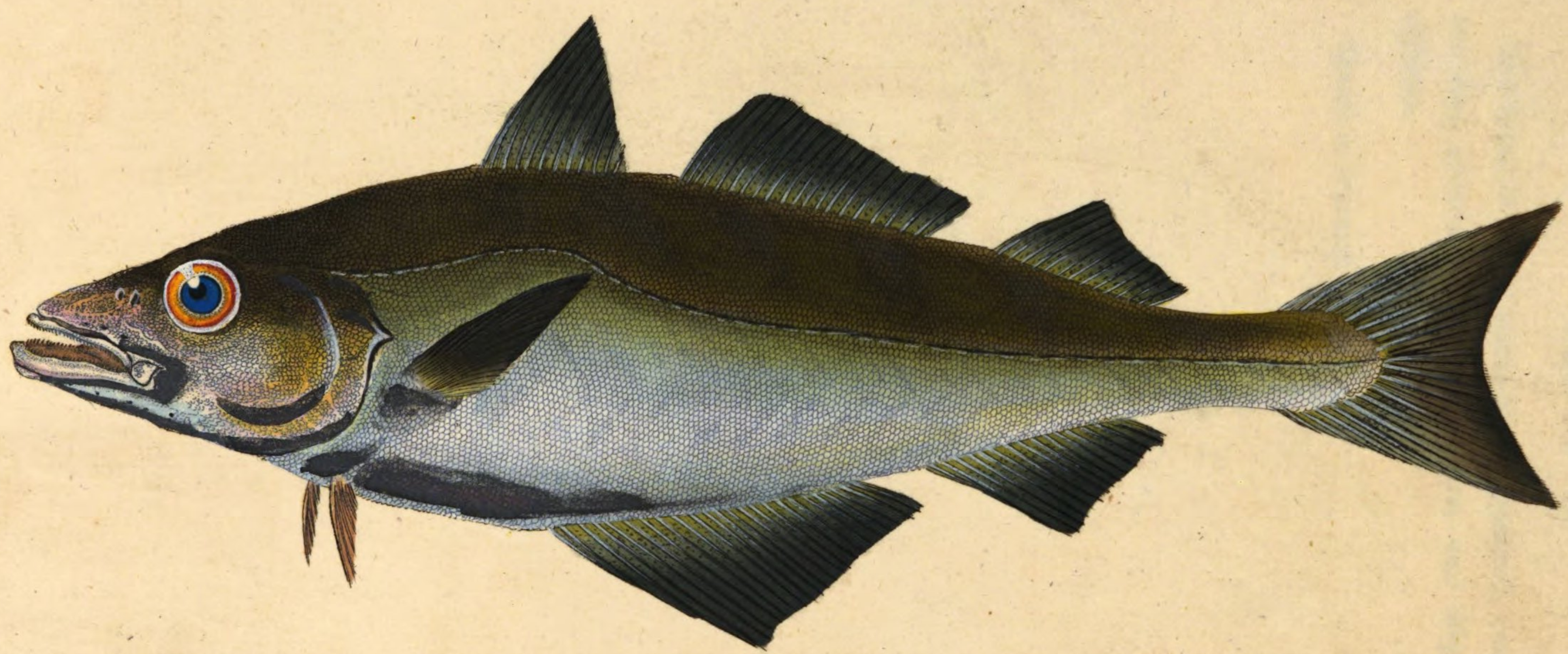
This very common species has been taken upon our coasts of the weight of fifteen pounds. The principal fishery of them is off the coast of Holland, from which circumstance they derived the name of Dutch Plaise.

## PLATE VI.

The dorsal fin of the specimen we examined, contained seventy-two rays, pectoral fin ten, ventral five, anal fifty-four, and tail eighteen.

Spawn in February and March.



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# PLATE VII.

## GADUS POLLACHIUS.

### *WHITING POLLACK.*

### *JUGULARES.*

GENERIC CHARACTER.

Head smooth; seven slender rays in the branchiostegeous membrane. Body oblong, scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Lower jaw longest; lateral line bent.

GADUS POLLACHIUS: maxilla inferiore longiore, linea laterali curva.
*Gmel. Linn. Syst. Nat. p.* 1169. *sp.* 10.

Asellus Huitingo-Pollachius. *Will. Icth.* 167.

Whiting Pollack. *Raii. syn. pisc.* 53.

Pollach. *Penn. Br. Zool. p.* 188. *sp.* 79.

---

Our specimen of the Whiting Pollack has twelve rays in the first dorsal fin, nineteen in the second, and fifteen in the third; the pectoral fin nineteen, ventral six, first anal twenty-three, second sixteen, and the tail forty-two.

## PLATE VII.

This species is frequent on several of our rocky coasts, and is in some esteem for the table. The largest we have seen did not exceed eighteen inches in length. Pennant speaks of some that weighed six or seven pounds, and mentions others that weighed near twenty-eight pounds, that were taken at Scarborough, which place they frequent during winter.

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# PLATE VIII.

## ZEUS FABER.

### *DOREE.*

### *THORACICI.*

GENERIC CHARACTER.

Head compressed, sloping: upper lip arched by a transverse membrane. Tongue subulate.

SPECIFIC CHARACTER

AND

SYNONYMS.

Tail rounded, a large brown ocellated spot on the sides. Two anal fins.

ZEUS FABER: cauda rotundata, lateribus medius ocello fusco, pinnis analibus duabus. *Gmel. Linn. Syst. Nat. p.* 1223. *sp.* 3.

A Doree. *Will. Icth.* 294.—*Raii. syn. pisc.* 99.

Doree. *Penn. Br. Zool. p.* 221. *sp.* 100.

---

The Doree, notwithstanding its hideous aspect, is in much esteem for its delicious flavour. It is said we are indebted to the epicurean Mr. Quin for overcoming those prejudices which its peculiar deformity had excited, and introducing it to the table.

## PLATE VIII.

Like the Haddock, this species, according to Pennant, was formerly an object of superstition. Some credulous authors believing that St. Christopher, in wading through an arm of the sea, caught a Doree, and, as a memorial to posterity of the fact, left an impression on its sides. Others believe it is the identical species, out of whose mouth St. Peter took the tribute money.

The colours of this fish when living, are olive, or lead colour, varied with blue and white, and the whole appears finely glossed with a golden hue, as its significant names, Faber and Doree, imply.

The first dorsal fin contains ten rays, which are strong, and furnished at the end with a long filament; the second twenty-four short rays; pectoral fourteen, ventral seven; in the first anal fin four spiny rays, second twenty-two soft ones, and in the tail fourteen.

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# PLATE IX.

## CALLIONYMUS LYRA.

### *GEMMOUS DRAGONET.*

### *JUGULARES.*

#### GENERIC CHARACTER.

Superior lip doubled; eyes approximate. Six rays in the gill, membrane, gills closed, aperture for breathing in the neck. Body naked. Ventral fins very remote.

#### SPECIFIC CHARACTER.

First ray of the first dorsal fin as long as the body.

CALLIONYMUS LYRA: dorsalis prioris radiis longitudine corporis.
*Gmel. Linn. Syst. Nat.* 1151. 151. *sp.* 1.

GEMMOUS DRAGONET. *Penn. Brit. Zool.* 3. *p.* 164. *n.* 69. *t.* 27.

---

This species was formerly known amongst English naturalists by the name of Yellow Gurnard, but which Mr. Pennant altered with much propriety; for it could not certainly have been confounded with that genus, had those authors attended to its essential character. The extreme length of the first ray of the dorsal fin at once distinguishes this creature from any other found on our coast.

## PLATE IX.

We believe the Dragonet is far from common, at least it is a local kind. The specimen from which the annexed figure is taken, was caught on the western coast, among Smelts.

The predominant colour of this fish, when living, is a fine pellucid brown, with marks and spots of pale blue, white, yellow, and black, disposed with peculiar elegance, and especially about the head and dorsal fin: the ventral fin is dark purple, which finely contrasts with the pellucidity and whiteness of the pectoral fin. The throat is black.

The ventral fin consists of five rays: pectoral of twenty: first dorsal fin of four rays, the first very long: second dorsal ray of nine; the last doubled up: anal fin nine rays, and caudal ten.

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# PLATE X.

## CYCLOPTERUS LUMPUS.

### *LUMP SUCKER.*

### ** *BRANCHIOSTEGI.*

GENERIC CHARACTER.

Head obtuse, mouth in the anterior part: tongue short and thick, jaws furnished with numerous minute sharp teeth. Branchostegeous membrane with four rays: cover of a single piece. Body short, thick, destitute of scales. Ventral fins connected: the sucker between them.

SPECIFIC CHARACTER

AND

SYNONYMS.

Body angulated, with bony tubercles.

CYCLOPTERUS LUMPUS: corpore squamis osseis angulato. *Gmel. Syst. Nat. T.* 1. *p.* 3. 139. *sp.* 1. 1473.

Cyclopterus ordinibus tuberculorum septem. *Block.*

LUMP, SEA OWL or COCK PADDLE. *Will. Icht.* 208.—*Raii syn. pisch.* 77.

LUMP SUCKER. *Penn. Brit. Zool. v.* 3. *p.* 133. *sp.* 57.

---

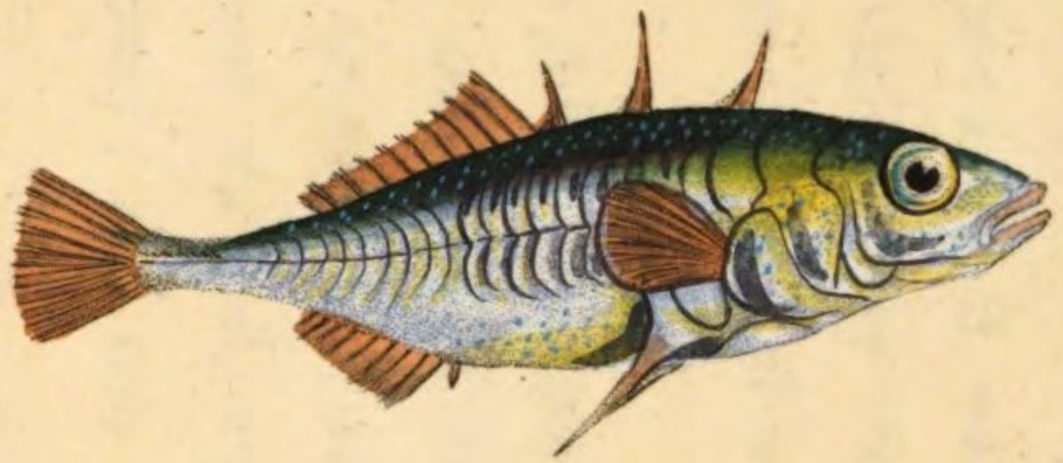
This species frequents the British shores in the spring, and by some the flesh is thought not indifferent when broiled, or stewed, after the

skin is taken off. Mr. Pennant says, they resort in multitudes at that season to the coast of Sutherland, near the Ord of Caithness; and that the seals which prey upon them leave the skins; numbers of which thus emptied, float at that time ashore. It is easy (adds that writer) to distinguish the place where seals are devouring this or any unctuous fish, by the smoothness of the water immediately above the spot; it being the property of oil to still the agitation of the waves, and render them smooth.

The Lumpsucker is found throughout the seas in the north part of Europe. The Greenlanders, it is said, call them Nipisets, and are remarkably fond of them, as they are of oily food in general.

Its organ of adhesion or sucker is large, and consists of a singular fleshy substance, surrounded by numerous little papilla; by means of which it adheres to the rocks in a manner truly astonishing. A fish of a moderate size has been known to suspend a weight of above twenty pounds upon which it had accidently fastened itself. Mr. Pennant says still more, for he has known that on flinging a fish of this kind just caught into a pail of water, it fixed itself so firmly to the bottom, that on taking it by the tail, the pail was lifted up, though it contained some gallons of water.

One or two writers think this species is sufficiently characterised by the number of the tuberculated angles of the body, which are seven, namely, three on each side, and one along the back. The dorsal fin is placed near the tail, and consists of eleven rays; in the pectoral fin are twenty; anal ten, and twelve in the tail.



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# PLATE XI.

## GASTEROSTEUS ACULEATUS.

### *THREE SPINED STICKLEBACK.*

### * *THORACII.*

GENERIC CHARACTER.

Head oblong, smooth; jaws armed with small teeth: tongue short, and obtuse: palate smooth: eyes moderate, very little prominent and lateral. Branchiostegeus membrane with three, six, and sometimes seven rays: operculum of two pieces, rounded and striated. Body carinated on each side and covered with bony plates: distinct spines before the dorsal fin: lateral line straight: ventral behind the pectoral fins, but above the sternum.

SPECIFIC CHARACTER

AND

SYNONYMS.

Three spines on the back.

GASTEROSTEUS ACULEATUS: spinis dorsalibus tribus. *Linn. Fn. Suec.* 336. *Gmel. T.* 1. *p.* 3. *p.* 1323.

Centriscus duobus in dorso arcuato aculeis, totidem in ventre. *Klein. miss. pisc.* 4. *p.* 48. *n.* 2. *t.* 14. *f.* 45.

THREE-SPINED STICKLEBACK: *Penn. Brit. Zool.* 3. *p.* 217.

Stickling, Stachelfisch. *Wulff. ichth. p.* 30. *n.* 37.

## PLATE XI.

The three-spined Stickleback is a very common species in many of our rivers, as in those of Europe in general; and, as Mr. Pennant writes of those in the fens of Lincolnshire, sometimes appear in the rivers on the continent in such amazing quantities that they become a perfect nuisance, and are taken to manure the lands. "At Spalding," says the author, "there are once in seven or eight years, amazing shoals that appear in the Welland, and come up the river in the form of a vast column. They are supposed to be the multitudes that have been washed out of the fens by the floods of several years, and collected in some deep hole, till overcharged with numbers, they are periodically obliged to attempt a change of place. The quantity is so great, that they are used to manure the lands, and trials have been made to get oil from them; a notion may be had of this vast shoal, by saying that a man employed by the farmer to take them has got for a considerable time four shillings a day by selling them at a half-penny per bushel." Gmelin says they are also used to fatten ducks and pigs, and others observe that they are taken in great quantities about Dantzig, by people who press an oil from them.

This fish is certainly not entirely peculiar to fresh water, for we have known it taken at a great distance out at sea in the Sprat and Herring fisheries: such however we observed differed a little in colour, being of a greener and more silverly cast than those found in the fresh waters, but they are undoubtedly in no respect specifically different from them. The colours of those in fresh water also vary at certain seasons, and it cannot have escaped remark, that when the female is in full roe, the chin and breast assumes a lovely red colour.

The length of this species rarely exceeds two inches; in this country, it is usually when full grown about an inch and an half, or at

most an inch and three quarters; but it arrives apparently at a greater size in other parts of Europe, as its length is commonly described by continental writers at about three inches.

It is esteemed a very short-lived creature, compared with others of the finny tribes, and has been called the "Ephemera of Fishes" for that reason: it commonly dies in the first or second year, and rarely indeed lives through the third. The spawning season is in April and June, when it deposits a number of very minute eggs upon the stalks of aquatic plants, and at the bottoms of rivers. It is a voracious little creature, and feeds on worms and insects. Frisch, Pallas, and M. Fabricius, who have each entered into its history, observe, that it is greatly tormented with worms at certain seasons; a fact sufficiently obvious to every common observer.

The head of this fish is rather compressed, and the eyes remarkably prominent: the sides are covered with a series of hard bony plates as in other species of the same genus; near the tail the body is square, and beneath the vent is a short spine. The dorsal spines which characterise the species may be erected or depressed at pleasure: the dorsal fin, which is near the tail, consists in our specimen of eleven rays, pectoral fin of ten rays, the ventral fin of a plate-like spine of three parts: anal fin one spiny and nine soft rays, and twelve rays in the tail.

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# PLATE XII.

## MULLUS SURMULLETUS.

### * *THORACII.*

#### GENERIC CHARACTER.

Head compressed, sloping, covered with scales: eyes oblong, placed near each other, vertical, and furnished with a nictitant membrane: nostrils double and minute; mandibules and palate beset with small teeth: tongue short, narrow, smooth and immoveable. Branchiostegous membrane with three rays: the covers of three plates very finely striated: aperture moderate. Body round elongated, red; scales large and very deciduous.

#### SPECIFIC CHARACTER

AND

#### SYNONYMS.

Two beards: body marked with longitudinal yellow lines.

MULLUS SURMULLETUS: cirris gemminis, lineis luteis longitudinalibus. *Gmel. T.* 1. *p.* 3. *p.* 1339. *sp.* 2.

Trigla capite glabro, lineis utrinque quatuor luteis longitudinalibus. *Art. gen.* 43. *syn.* 72.

Mullus corpore argenteo luteo longitudinaliter lineato, desquamato rubro. *Brünn. pisc. mass. p.* 71. *n.* 88.

STRIPED SURMULLET. *Penn. Brit. Zool. T.* 3. *p.* 229. *n.* 2. *t.* 13.

## PLATE XII.

There is a singular discordance of opinion amongst the ablest naturalists concerning the two kinds of *Mullus* described by Linnæus under the specific names of *Surmulletus* and *Barbatus*, some conceiving them to be varieties only, or rather differing at a certain age, and others with Linnæus believing them to be distinct species.

Linnæus, in the early editions of the Systema Naturæ, seems to have adhered in some measure to the opinion of Artedi, and in defining these species observes, that Barbatus has two beards, and body red, and Surmulletus two beards and body marked with longitudinal yellow lines. Artedi states the number of those yellow lines on the latter to be four on each side, but from the subsequent observations of other naturalists, it is evident these vary exceedingly in different specimens. Block remarks that his agrees with that of Salvianus in having only three of them: in a MS. of Father Plumier five are mentioned; Mr. Pennant speaks only of two, and these, he adds, "with the red colour of the dorsal fins and the number of rays, Mr. Ray makes the character of the Cornish Surmullet." It is therefore evident, the number of yellow lines can by no means assist us in defining the species, and it has been doubted whether the total absence of them, as in Barbatus, is a sufficient proof of a specific difference.

That which is uniformly red, we have not seen. Mr. Pennant says he heard of the *Red Surmullet* being taken on the coast of Scotland; and a little further remarks, that Salvianus makes it a distinct species, as it was of a purple colour, striped with golden lines. By this oblique allusion to the fish described by Salvianus, it is probable he meant one of the striped kind only: for it is apparent he was not well acquainted with either of the Surmullets when he

wrote the British Zoology: the striped sort we know is found on several of our coasts, and probably on those of Scotland also.

The Red Surmullet is said to be smaller than the other, and some have conjectured, that after a certain age these lines appear. Block hints that the male may be that which is striped, and the other the female: Gronovius and some others are of opinion that they are merely varieties of each other. Having seen small ones of five or six inches in length that were striped, as in the larger sort, and having the assurance of the fishermen on the western coast, where they are most abundant, that they have no other than the striped sort, we cannot assent to the first opinion: the second is equally inadmissible, because we have both sexes of them so characterized; and as to the last, it is most probable; but not having seen the red kind, it would be improper to offer any further opinion respecting it.

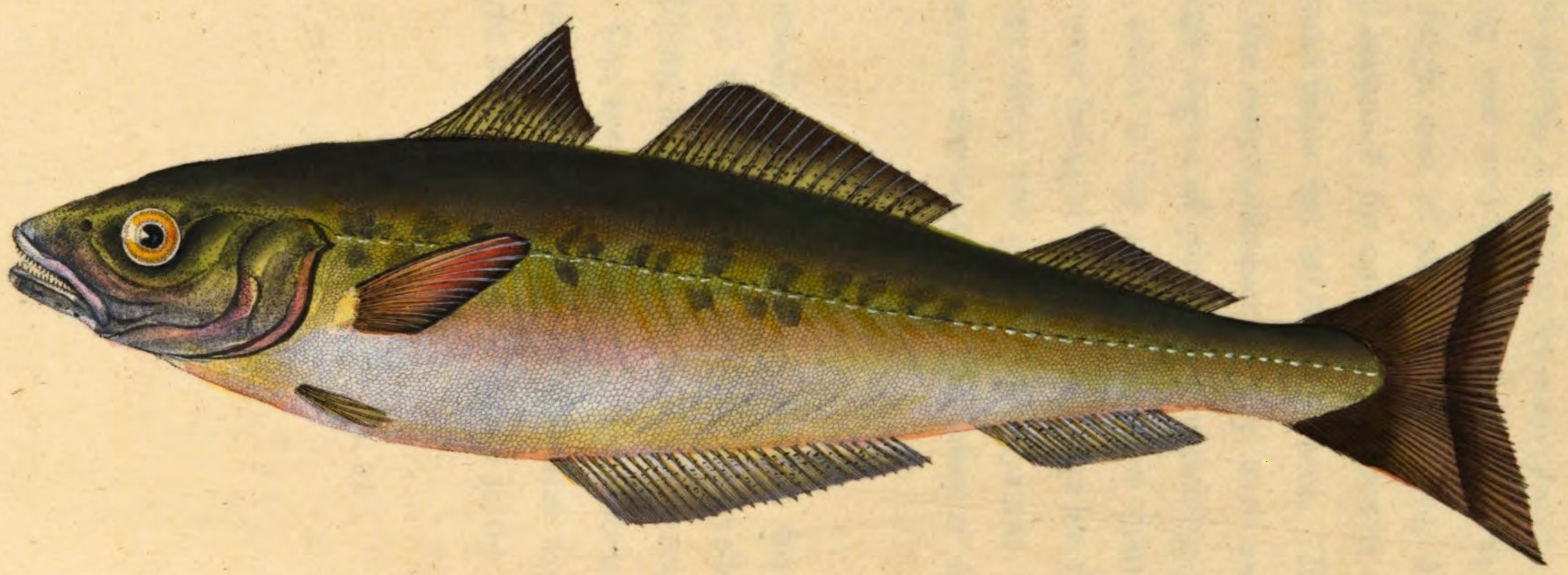
Neither is it more clearly ascertained which of the two kinds was so highly valued by the Romans, or whether they made any distinction. Both kinds, it is said, are found in the Mediterranean; they inhabit the Italian shores, and might have had an equal claim to that honour. Or, indeed, since the striped kind is said to be the largest, this should have the preference, for those prodigal epicures always valued them in proportion to the size. Linnæus and Gmelin think otherwise, and say it was the Red Mullet; and Block, who prudently forbears to separate the two kinds, thinks however that it was the largest, and consequently the Striped Surmullet.

The excess to which the Romans carried their extravagance for this fish, is scarcely to be credited in our days. From Horace, Juvenal, Pliny, and others of the ancients we learn, that one of six pounds was

deemed a prodigious rarity, and fetched a price truly enormous: six thousand pieces, a sesterce for each pound. Callidore is reproached for having paid twelve hundred sesterces for four Surmullets to put into a ſingle dish of soup. Pliny says, Asinius Celer gave eight thousand nummi * for one; and Suetonius afterwards bought three of the same fishes for 30,000 sesterces. The delicacy of its flesh was not the only incitement to pay such excessive prices; they had also a high degree of pleasure in watching the changes of its vivid colours while it lay expiring, and at their sumptuous feasts, the Mullets were brought from a vessel under the table in which they were kept alive, and put into transparent vases for that purpose. Seneca says it was worth nothing unless it died in the hands of the guests.

It is usually about a foot in length: the colour the finest red, whitish on the belly, and striped with yellow. It feeds on other fishes, Crabs, &c. and approaches the shores in spring to deposit the spawn. Our specimen has in the first dorsal fin seven rays, in the second nine: ſixteen rays in the pectoral fin: seven in the ventral fin: eight in the anal fin, and twenty in the tail.

* £. 64. 11s. 8d.



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# PLATE XIII.

## GADUS CARBONARIUS.

### *COAL FISH.*

### * *JUGULARES.*

#### GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegeous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

#### SPECIFIC CHARACTER

AND

#### SYNONYMS.

Lower jaw longeſt; lateral line ſtraight.

GADUS CARBONARIUS: maxilla inferiore, longiore, linea laterali recta. *Gmelin. Syst. Nat. T.* 3. *p.* 1. *p.* 1168. *sp.* 9.

Gadus dorso tripterygio imberbis, maxilla inferiore, linea laterali recta. *Art. gen.* 20 *syn.* 34.

COAL FISH. *Penn. Brit. Zool.* 3. *p.* 152. *n.* 7.

---

This species inhabits many of our rocky coasts: towards the Northern part of the island it is abundant, as it is also in the whole

of the North and Baltic seas, and according to Gmelin of the Pacific Ocean also.

In different stages of growth the colours of this fish vary so exceedingly as to be often mistaken for distinct species, and hence they have been called Parrs, Billets and Coal fish. When young there is a certain duskiness of colour about this fish, which becomes darker as they grow older, and when very large the back, nose, dorsal fins and tail sometimes become of a deep black. Under the pectoral fin is a black spot: the mouth also is of the same colour, and the tongue silvery.

The young fry, according to Mr. Pennant, swarm about the Orkneys, and are the great support of the poor. They begin to appear on the Yorkshire coasts in vast shoals in the early part of July, and are then about an inch and an half in length. In August they are from three to five inches in length; are then very abundant, and esteemed a delicacy. They grow very coarse after that time, and when from eight to fifteen inches in length few people will eat them; at that time they are about a twelvemonth old, and appear dusky about the back and gills. They are sometimes salted and dried for sale when taken of a larger size.

The Linnæan character is perhaps too concise, though it may be correct; Block thinks the blackness of the mouth and ſtraight white lateral line is sufficient to descriminate the species.

This fiſh is covered with very small oblong scales. It has three dorsal fins, in the first are fourteen rays, in the second eighteen, and in the third twenty: in the pectoral fin eighteen: ventral five:

first anal fin twenty-six, second twenty-one, and in the tail thirty-three, beside ten very short ones on each side; the tail is broad and forked.

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# PLATE XIV.

## GADUS MUSTELA.

### *FIVE BEARDED COD FISH.*

### ** *JUGULARES.*

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegeous-membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

Five beards. First dorsal fin obsolete.

GADUS MUSTELLA: cirris quinque, pinna dorsali priore exsoleta. *Gmel. Syst. Nat. T.* 1. *p.* 3. *p.* 1173. *sp.* 25.

Dorso dipterygio, cirris maxillæ superioris 4, inferioris 1. *Mus. Ad. Fr.* 1.

FIVE BEARDED COD. *Penn. Brit. Zool. Vol.* 3. *p.* 202. *sp.* 88.

---

This, and the small species of Gadus, *tricirratus*, have been considered by some as varieties of the same species. Our reason for dis-

senting from that opinion has been already given in the description of the latter, plate 2. of this work. Its greateſt length is mentioned at nineteen inches, and our specimen is much smaller; it feeds on shell fish and crabs, and inhabits moſt of the European shores; but at the same time it must be observed that on those of Great Britain it is very uncommon.

In the course of our enquiries respecting the Cornish fisheries we cannot learn that it is known on that coast. Mr. Pennant observes, that the Cornish fishermen are said to whistle and make use of the words *Bod*, *Bod Vean*, when they are desirous of taking this fish, as if by that they facilitated the capture; in the same manner as the Sicilian fishermen repeat their *Mamussu di pajanu*, &c. when they are in pursuit of the Sword fish.

The first dorsal fin consists of one ray, and many very obsolete; the second of forty-nine rays: the pectoral fin of fourteen rays: ventral of six rays; anal of forty rays; and tail of twenty-four.

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# PLATE XV.

## MUGIL CEPHALUS.

### *MULLET.*

### * *ABDOMINALES.*

GENERIC CHARACTER.

Head: Lips membranaceous: the lowered one carinated within. No teeth * ; in the upper part of the mouth a double fang-like callosity. Branchiostegeous-membrane with seven curved rays; covers smooth and rotundated. Body whitish.

SPECIFIC CHARACTER

AND

SYNONYMS.

Four rays in the first dorsal fin.

MUGIL CEPHALUS: pinna dorsali anteriore quinque radiata. *Linn. Syst. Gmel. T.* 1. *p.* 3. *p.* 1397. 184. *sp.* 1.—*and*

MUGIL ALBULA: pinna dorsali anteriore quadriradiata. *Gmel. T.* 1. *p.* 3. *p.* 1340. 184. *sp.* 2.

MULLET. *Penn. Brit. Zool. p.* 329. *sp.* 158.

* This is an erroneous opinion of several authors beside Linnæus and Gmelin. Its teeth are minute, but sufficiently apparent in such of the genus as we have had an opportunity of inspecting; and are disposed along the exterior margin of the lips, especially the upper one:—these teeth or denticulations are visible enough in Mugil Cephalus.

## PLATE XV.

We are persuaded the distinctions between *Mugil Cephalus* and *Mugil Albula*, as stated in the *Systema Naturæ*, are by no means sufficient to prove them different. It is said, that *Cephalus* has five rays in the first dorsal fin, and inhabits Europe. Albula differs in having only four rays in the dorsal fin, and inhabits America; and yet Gmelin refers amongst the synonyms of Mugil Cephalus to *Gronovius*, who describes but four rays in that part of his fish:—the only character Gmelin assigns to his second species, *Albula*.

A slight attention to the accounts of authors on Ichthyology will convince us that the number of rays in the fins of fishes are often inconstant. *Gmelin* acknowledges that M. Cephalus, having five rays in the dorsal fin, is an European kind; and the observations of Pennant, Block, and others, prove, that, with only four rays in the dorsal fin, is an European species also. The existence of *Albula* rests on the authority of Catesby and Brown; the first describing it as a native of Carolina, and the other of Jamaica. Whether it differs specifically from Cephalus may be doubted, but the character given of it does not remove it from the foregoing species. Block says, Mugil Cephalus is found in every part of the world, and adduces the evidence of Brown as a proof that it is found in Jamaica, so that he considers them both as the same species.

Linnæus describes but one European *Mugil*, and he could certainly have meant no other by his Cephalus than our species. In the synonyms quoted in the early editions of the *Systema Naturæ*, the number of these rays in question are stated both at four and five. And we think they must be both the same species, accidentally differing in the specimens examined by different authors.

## PLATE XV.

The Mullet is an inhabitant of the salt waters. It frequents sandy bays, and the entrances of great rivers, and in the summer months has been known to enter into fresh waters, as is supposed to deposit its spawn. They swarm on many of the European shores, and particularly those of the Mediterranean, where they are taken in a kind of wear contrived on purpose; for they are a cunning fish, and not taken in nets without some difficulty. It is said, that if one of them escapes out of the net by leaping over its side, the rest of the shoal will assuredly follow it, and escape also.

On the coasts of Italy, where this fish is very abundant, the natives make their botargo of the roe of the females. This part is taken out entire, and covered with salt for four or five hours, then slightly pressed between two boards, and, lastly, washed and dried in the sun for about fourteen days; in the month of August it is fit for use in eight or ten days.

The length of this species is about a foot or fifteen inches. It has five rays in the dorsal fin, in the second eight: pectoral fin seventeen: ventral fin one spiny and six soft rays: anal fin nine: tail twelve, and two very short ones on each side.

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# PLATE XVI.

## COTTUS CATAPHRACTUS.

### *POGGE, OR ARMED BULL-HEAD.*

GENERIC CHARACTER.

Head broader than the body, and spinous: eyes vertical, and furnished with a nictitant membrane: six rays in the gill membrane: body round, without scales, and tapering towards the tail: one or more dorsal fin.

SPECIFIC CHARACTER.

Loricated or mailed, beak or upper jaw warted, and furnished with two upright bifid spines: under jaw and throat beset with cirri.

COTTUS CATAPHRACTUS: loricatus, rostro verrucis 2 bifidis, capite subtus cirroso. *Faun. Suec.* 324.—*Gmel. Linn. Syst. Nat. T.* 1. *p.* 3. *p.* 1207. *sp.* 1

Cottus cirris plurimis, corpore octagono. *Mus. Ad. Fr.* 1. *p.* 70.

Pogge. *Will. Icth.* 211.—*Raii. Syn. pisc.* 77.

ARMED BULL-HEAD, or POGGE. *Penn. Brit. Zool. Vol.* 3. *p.* 217. *sp.* 98.

---

This species frequents the British shores in some plenty, and is found on most other coasts of Europe. It feeds on crabs, and other marine insects, worms, &c.

## PLATE XVI.

The usual length is four or five inches, but it sometimes, though rarely, encreases to above the length of six inches. In our specimen the first dorsal fin contains five rays, the second seven: the pectoral fin eighteen, ventral three: anal six; and the tail ten.

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# PLATE XVII.

## SQUALUS SQUATINA.

### *ANGEL SHARK.*

### *PISCES CHONDROPTERYGII.*

GENERIC CHARACTER.

Head obtuse. Spiracles four to seven, placed on the side of the neck, and semilunar. Eyes oblong, vertical, half covered, and situated before the temporal orifices. Mouth beneath, in the anterior part of the head: teeth numerous, serrated, acute, partly moveable: partly fixed; and unequal. Body oblong, roundish, and rough, with tender prickles. Ventral fins for the most part smaller than the pectoral, approximate, and situated round the vent, or genitalia, in the males.

SPECIFIC CHARACTER

AND

SYNONYMS.

Pectoral fins large, and notched in front.

SQUALUS SQUATINA: pinnis pectoralibus maximis anterius emarginatis. *Gmelin. Syst. Nat. T.* 1. *p.* 3. *p.* 1503. *sp.* 4.

Squalus pinna anali nulla, caudæ duobus, ore terminali, naribus cirrosis. *Linn. Syst. Nat.* 12. 1. *p.* 398.

## PLATE XVII.

Squalus capite plagioplateo lato, ore in apice capitis, naribus cirrosis.
*Gron. Mus.* 1. 137. *Zooph.* 151.

Rhina sive Squatina autorum. *Klein. miss. pisc.* 3. *p.* 14. *n.* 1. *t.* 2. *f.* 5. 6.

ANGEL FISH. *Penn. Brit. Zool. T.* 3. *p.* 98. *sp.* 39.

L'Angelot de Mer. *Block.*

---

The Angel Fish appears to be an intermediate creature between the two genera Rays and Sharks; although it is with most propriety referred to the latter. Of its fierceness and voracity, there are many instances; and it grows sometimes to such an enormous size, as to become truly formidable. Mr. Pennant knew an instance of a fisherman whose leg was terribly torn by a large one, which lay within his nets in shallow water, and which he went to lay hold of incautiously.

Like the Ray, the Angel Fish feeds on flounders and other flat fish, which keep at the bottom of the water; and haunts our coasts in abundance. They are sometimes caught, and brought to the fish markets, where they are sold under the name of *Fiddle Fish*, or *Puppy Fish:* the flesh is very indifferent, and the price of course is inconsiderable. Among the ancients it was in great esteem as an article of food; they considered it the most delicate of the whole cartilaginous tribe.

The largest creature of this kind that is recorded as a native of our seas, weighed nearly an hundred weight: in the North and Mediterranean Seas, where it is also very frequent, there are in-

stances known of its having been taken of the length of six or eight feet, and the weight of one of that size must be very great.

Above, the colour is of an ash colour, of various shades, according to the age of the fish: faintly speckled, and rough, with little prickles; beneath, it is entirely white. The Romans formerly made use of the skin to polish their wood and ivory; and the Turks, it is said, make their best shagreen of it at this time.

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# PLATE XVIII.

## CYPRINUS ALBURNUS.

### *BLEAK.*

GENERIC CHARACTER.

Mouth without teeth: branchiostegous membrane with three rays. Body smooth, whitish: ventral fins in general with nine rays.

SPECIFIC CHARACTER.

Twenty rays in the anal fin.

CYPRINUS ALBURNUS pinna ani radiis 20. *Fn. Suec.* 377.—*Gmel. Linn. Syst. Nat. T.* 1. *p.* 3. *p.* 1434. *sp.* 24.

Leuciscus dorso ex viridi fusco, &c. *Klein. miss. pisc.* 5. *p.* 68. *n.* 16. *t.* 18. *f.* 3.

Albule. *Gesn. Thierb. p.* 159.

BLEAK. *Will. Icth.* 263.—*Raii. Syn. pisc.* 123.—*Penn. Brit. Zool. T.* 3. *p.* 370. 176.

---

The Bleak is a very abundant fish in many of our rivers, and in those of the north of Europe in general. The form is elegant, and the colours brilliant: the flesh is in some esteem, but it is chiefly taken for the sake of the beautiful silvery scales, which artists make use of in the manufactory of artificial pearl.

## PLATE XVIII.

The credit of this invention is claimed by the French; and it is said they have arrived at such a degree of perfection in the art, that independant of the plain silvery hue of the beads in common, they can vary the colour to blue, green, or any other vivid tint they may desire. The process is very short; the scales are scraped off, washed, and then reduced to a fine powder; this is diluted with water, and introduced into a thin bubble of glass, where it forms an internal coating: the cavity is then filled with wax, through which a hole is bored, and the bead is finished.

Gmelin speaks of this species as being from four to ten inches in length: in the river Thames, about Battersea, or still higher up the country, they are sometimes taken full eight inches in length; but the common size scarcely exceeds five or six inches at most.

At certain times in the summer, the Bleak is infested with a creature of the Vermes tribe, which hastily increasing in size, very often destroys it. Fishes so infested rise to the surface of the water, where they leap and tumble about in the greatest agonies, and in that state are well known to the fishermen by the name of Mad Bleaks. Upon opening them at this season, there is always found one, and sometimes more of these worms, in the intestines of each: these rapacious creatures are flattish, broad, and when extended, are oftentimes twice the length of the fish they infest.

The Bleak may be taken at any season of the year with a hook and line. It is distinguished from every other species of the Cyprinus genus by the superior length of the under jaw. The time of spawning is in May, June, and July.

## PLATE XVIII.

There is a small fish of this genus that appears in immense numbers during the month of July, in the Thames, near Blackwall and Greenwich, where it is well known by the name of White Bait; and it is believed to be nothing more than the fry of this species.

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# PLATE XIX.

## GADUS LUSCUS.

*BIB.*

GENERIC CHARACTER.

Head smooth. Seven slender rays in the branchiostegous membrane. Body oblong. Scales deciduous. All the fins covered with a skin. More than one dorsal and anal fin; rays unarmed. Ventral fin slender, pointed.

SPECIFIC CHARACTER

AND

SYNONYMS.

First ray of the ventral fin setaceous.

GADUS LUSCUS: radio ventralium primo setaceo. *Linn.—Gmel. Syst. Nat. T.* 1. *p.* 3. *p.* 1163. *sp.* 4.

Gadus dorso tripterygio, ore cirrato, ossiculo pinnarum ventralium primo in setam longam, producto. *Arted. gen. syn.* 35.

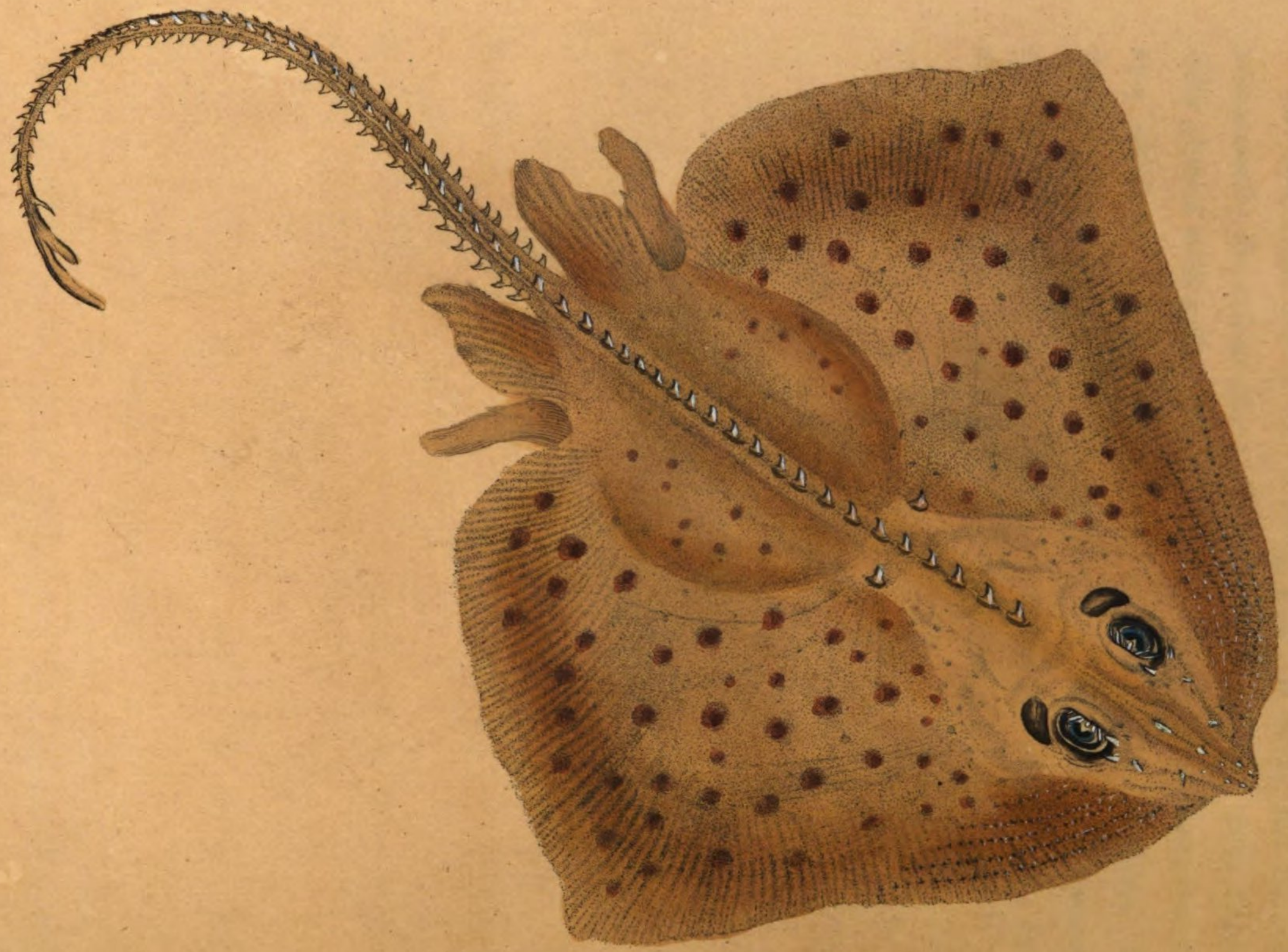
BIB. *Penn. Brit. Zool. V.* 3. *p.* 184.

---

This we apprehend to be an uncommon fish on the British coasts, having only met with a single specimen of it, and that in the sea to

the north of Caernarvonshire: the fishermen in those parts know it by the name of the Miller's Thumb, Deillion.

The body, like that of the Whiting Pout, is deep, and the sides compressed; the colour along the back olive, and the sides beautifully glossed with gold. There is also a loose membrane over the eye, which the creature can blow up at pleasure like a bladder. In the first dorsal fin we counted thirteen rays, in the second twenty, and in the third nineteen: pectoral fins sixteen: ventral five: first anal twenty-three, second anal twenty: tail thirty-three.



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# PLATE XX.

## RAJA RUBUS.

### *ROUGH RAY.*

GENERIC CHARACTER.

Spiracles ten, five on each side, oblique, and placed beneath, near the neck: head small, pointed, not distinct from the breast, with the mouth beneath, transverse, and toothed: body thin, depressed, and rhombic.

SPECIFIC CHARACTER

AND

SYNONYMS.

Back a single, tail with three rows of spines.

RAJA RUBUS: ordine aculeorum in dorso unico, tribusque in cauda *Block. Gmel. Linn. Syst. Nat. T.* 1. *p.* 3. *p.* 1507. *sp.* 10.

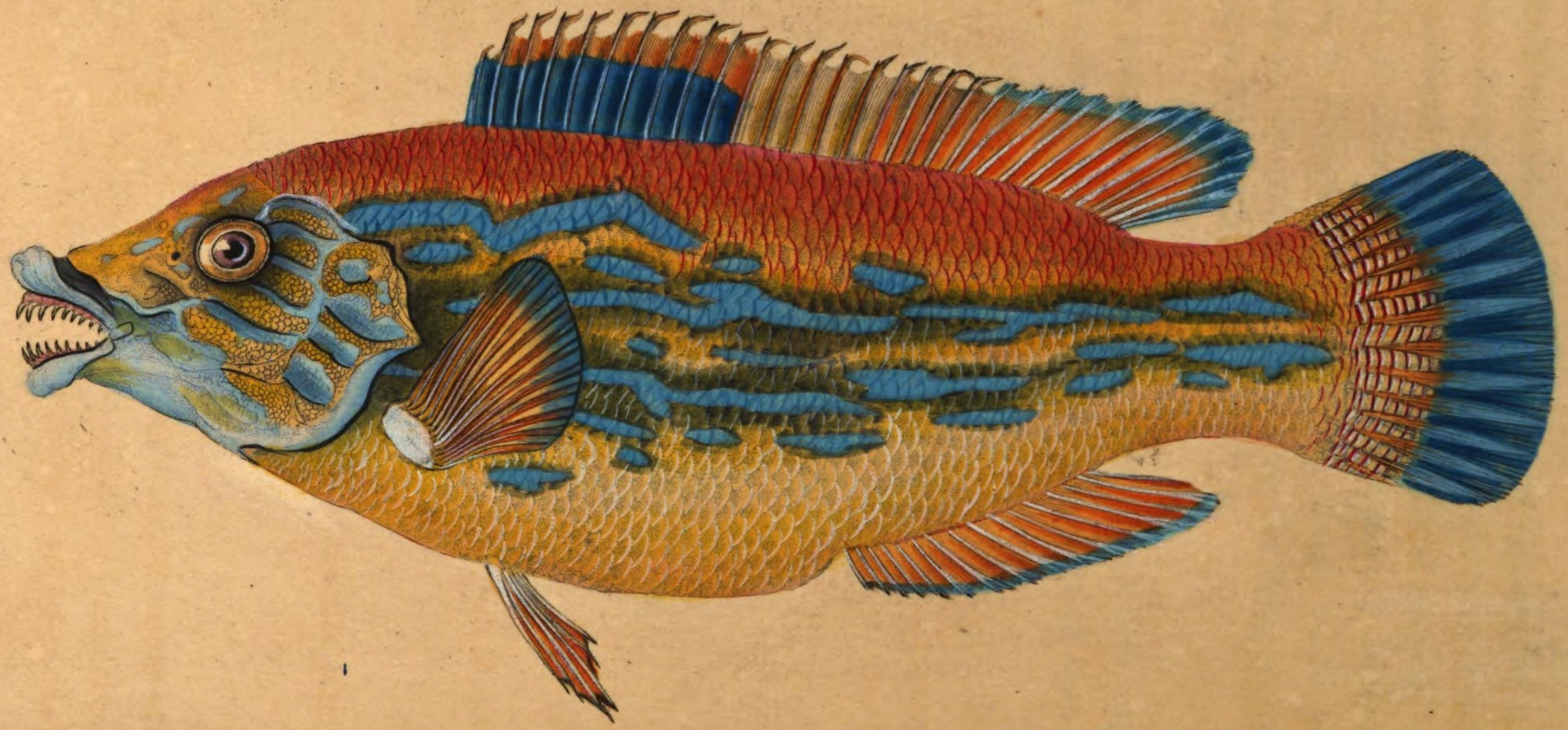
La Ronce. *Block.*

---

Linnæus was either unacquainted with this fish; or perhaps mistook it, as Block observes, for a variety of the common Thornback. It has been since described by other writers, and lastly by Gmelin. This author is of opinion, that the Ray which Mr. Pennant found in Lock Broom, in the Shire of Ross, in Scotland, and which he

calls the Rough Ray, is of this species: an opinion, we think, not unlikely, although his description does not strictly agree with any of those specimens we have had an opportunity of noticing. In small subjects, the tuberculated and prickly appearance of the skin is less obvious, in proportion than in the larger ones; but the triple row of spines on the tail, and single one on the back, is sufficiently apparent in the smallest we have seen.

This species is sometimes brought to the London markets, and is known on the coasts of Pembrokeshire by the name of Sand Ray.



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# PLATE XXI.

## LABRUS VARIEGATUS.

### *STRIPED WRASSE.*

### * *PISCES THORACICI.*

GENERIC CHARACTER.

Teeth acute: lips simple: branchiostegous membrane, with six rays, and scaly covers: dorsal fin, with a slender skin beyond the end of each ray; pectoral acuminated: lateral line straight.

SPECIFIC CHARACTER

AND

SYNONYMS.

Red, with four lateral parallel olive stripes, and an equal number of blue ones.

LABRUS VARIEGATUS: ruber, striis lateralibus parallelis olivaceis 4, totidemque cæruleis. *Gmel. Linn. Syst. Nat. T.* 1. *p.* 3. *p.* 1294. *sp.* 58.

STRIPED WRASSE. *Penn. Brit. Zool. T.* 3. *p.* 207. *n.* 4.

---

The Striped Wrasse does not appear to be described by any of the continental writers on Natural History, except Gmelin, in the last edition of the Linnæan Systema Naturæ, and even there it is

mentioned on the authority of the British Zoology only; we therefore conclude it has not been hitherto discovered on any other than the British coasts, where it is perfectly local and very rare.

To Mr. Pennant we are indebted for the first account of this fish: he was so fortunate as to discover it some years ago on the coast of Anglesea, off the Skerry Islands. The length of his specimen was ten inches; but we procured both sexes at the same place, and of a size rather larger, the female measuring fourteen inches in length, and the male twelve.

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# PLATE XXII.

## COBITIS BARBATULA.

### *BEARDED LOCHE.*

GENERIC CHARACTER.

Head small, oblong, naked: eyes in the upper part of the head, and nape flat: branchiostegous membrane with from four to six rays; covers of one piece and close beneath. Body covered with a mucous; and small, thin, and very deciduous scales: variously banded and spotted; and nearly of an equal thickness throughout. Back straight, with a single fin: lateral line scarcely conspicuous: vent near the tail: the latter rounded.

SPECIFIC CHARACTER

AND

SYNONYMS.

Cirri six: head unarmed and compressed.

COBITIS BARBATULA cirris 6, capite inermi compresso. *Linn.*—*Gmel. Syst. Nat. T.* 1. *p.* 3. *p.* 1348. *sp.* 2.

Enchelyopus nobilis cinereus, &c. *Klein miss. pisc.* 4. *p.* 59. *n.* 3. *t.* 15. *f.* 4.

Cobitis barbatula, *Rondel. Aldr. Johnst*, &c.

Cobitis fluviatilis, *Raj. pisc. p.* 124.

Fundulus, *Mars. Danub.* 4. *p.* 74. *t.* 25. *f.* 1.

Bearded Loche, *Penn. Brit. Zool. T.* 1. *p.* 3. *p.* 1348. *sp.* 2.

## PLATE XXII.

A native of Europe and Asia; and most frequent in fresh water streams and lakes in mountainous countries. From its habit of lurking at the bottom of the water, on the gravel, it has been called the groundling; but the latter name is now given to the Spiny Loche, a fish distinguished from the present by having a forked spine under each eye, and is that species of Cobitis which Gmelin calls Tænia.

This is a fertile creature: it spawns in the month of March and April, and grows to the length of three or four inches, but seldom larger. It feeds on aquatic insects, and, we are told by Mr. Pennant, is frequent in the stream near Amesbury, in Wiltshire, where the sportsmen, through frolic, swallow it down alive in a glass of wine.

The Loche is found in far greater abundance in France, and other parts of Europe, than in England; and are in such high estimation for their exquisite delicacy and flavour, that they are often transported with considerable trouble from the rivers they naturally inhabit, to waters more contiguous to the estates of the great. This is usually performed in Winter, and it is necessary to keep the water in continual agitation the whole way, as the fish would otherwise die. Frederic the First, King of Sweden, had them brought in this manner from Germany into his country, where they have been since naturalized; a circumstance that leads us to conclude they were either scarce, or not originally natives of that country.

In the dorsal fin of our specimen, are nine rays; in the pectoral, eleven; ventral, eight; anal, seven; and in the tail, nineteen.

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# PLATE XXIII.

## TRACHINUS DRACO.

### *COMMON WEEVER.*

GENERIC CHARACTER.

Head smooth, compressed: branchiostegous membrane with six rays: inferior lamina of the gill-covers, serrated. Vent near the breast.

SPECIFIC CHARACTER.

Inferior jaw longest, destitute of cirri.

TRACHINUS DRACO. *Gmel. Linn. Syst. Nat. T.* 1. *p.* 3. *p.* 1157. 153. *Sp.* 1.

Trachinus maxilla inferiore longiore, cirrhis destituta. *Art. gen.* 42. *syn.* 70.

Trachinus maxilla inferiore longiore, radiis quinque in pinna dorsali prima. *Block. Fisch. Deutschl.* 2. *p.* 131. *t.* 61.

---

The Weever grows sometimes to the length of ten or twelve inches; and inhabits most of the seas of Europe. It lurks under the sand on the sea-shore, with only the nose and first dorsal fin above the surface. In this posture it is a dangerous creature, and greatly dreaded by fishermen and others, who necessarily walk bare-

footed upon the sands, for should they happen to tread upon it, the Weever never fails to inflict a deep and grievous wound with the erected spines of this dorsal fin: in the first instance it is exceedingly painful, attended with a violent burning, and sometimes a dangerous inflamation of the whole limb almost immediately ensues.

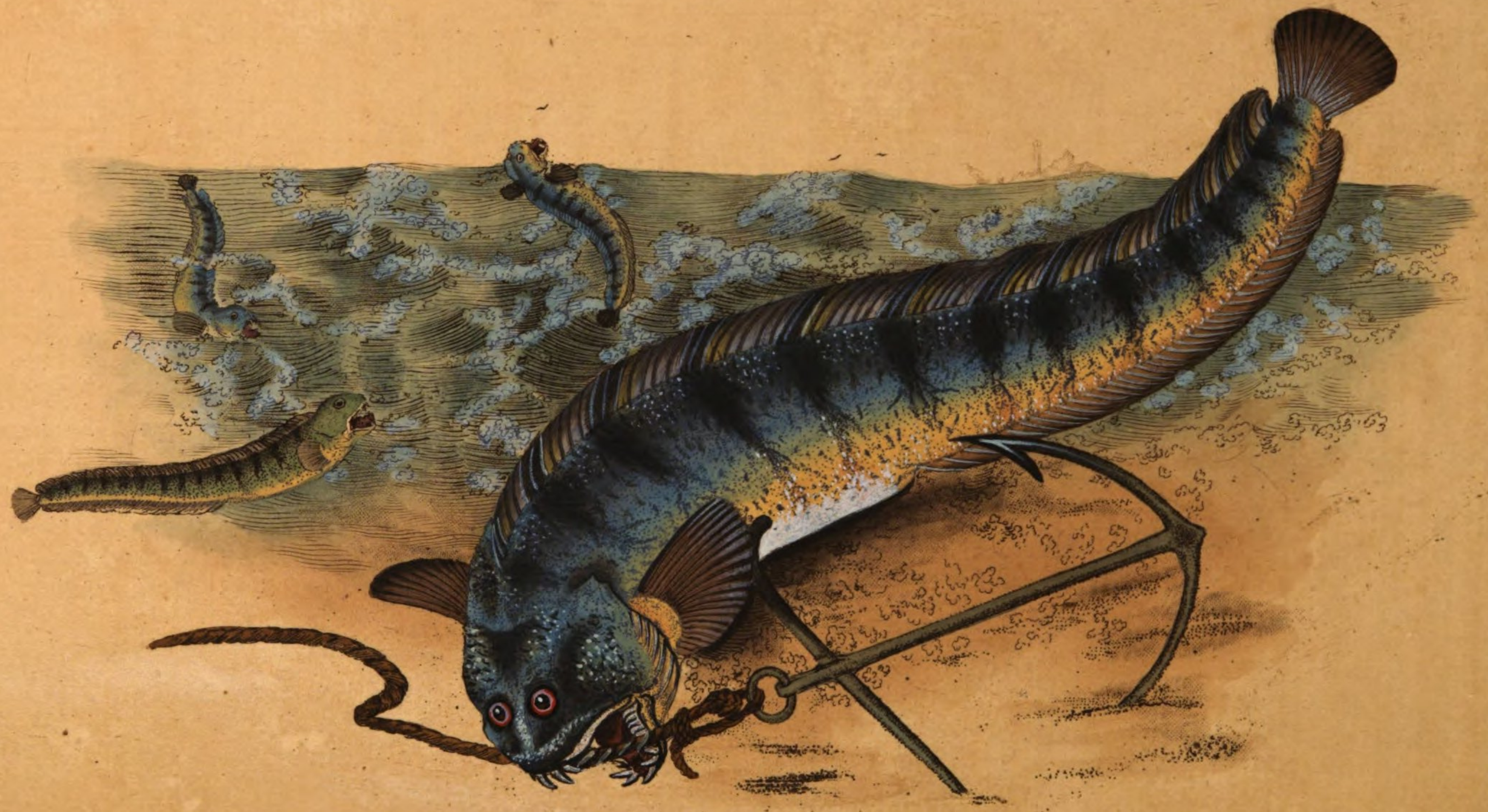
Mr. Pennant observes, it is a common opinion that these symptoms proceed from something more than the small wound this fish is capable of inflicting; and that there is a venom infused into it; at least such as are made by the spines that form the first dorsal fin, which is dyed with black, and has a most suspicious aspect. The same writer likewise remarks, that the remedy used by the fishermen on the coast of Flintshire is the sea-sand, with which they rub the wounded part for a considerable time; at Scarborough, stale urine warmed has been used with success; and in the *Universal Museum*, for November 1765, we find an instance of a person who was reduced to great danger by a wound from one of this species, and was cured by the application of sweet oil, and taking opium and Venice treacle *.—The fishermen in the South of France, apply leaves of the *Lentisque*, or Mastic Tree, which grows in that country.

As the flesh of the Weever is excellent; they are caught in great numbers on the coast of Holland, and, to prevent accidents, the dorsal fin is cut off before they are brought to market: this is but a necessary precaution, as the fish will live a considerable time out of the water; Weevers thus deprived of their noxious weapon of offence, are sometimes exposed for sale in the fish-markets of London also.

* *Penn. Brit. Zool.*

## PLATE XXIII.

In the dorsal fin of the species represented in the annexed plate are five spines; some writers describe it as having six: the second dorsal fin contains twenty-five rays; the pectoral, fifteen; ventral, six: anal, twenty-five; and tail, ten; with three short ones on each side.



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# PLATE XXIV.

## ANARHICHAS LUPUS *var?*

### *STRIPED SEA WOLF.*

### *APODES.*

GENERIC CHARACTER.

Head obtuse: fore teeth in each jaw, conic, divergent, six in number, or more: grinders in the lower jaw, and palate rounded: branchiostegous membrane with six rays: body roundish: tail fin distinct.

SPECIFIC CHARACTER

AND

SYNONYMS.

Dusky ash colour, with irregular transverse brown streaks.

ANARHICHAS LUPUS, WOLF FISH. *Penn. Brit. Zool. V.* 3. *n.* 65. *p.* 151.

ANARHICHAS STRIGOSUS: strigis irregularibus fere transversis fuscis. *Gmel. Syst. T.* 1. *p.* 3. *p.* 1144. *sp.* 4.

ANARHICHAS LUPUS: ex cinereo niger, lateribus, pinnis anali caudalisque et abdomine albis? *Linn. Syst. Nat.* 1. *p.* 430. *n.* 1.

---

Whether the Linnæan definition of Anarhichas Lupus be sufficiently expressive, may admit of doubt; yet we cannot still believe

that Gmelin is perfectly authorized in constituting a different species of the fish described by Pennant, in the British Zoology, merely because Linnæus does not notice one particular that we may deem a striking characteristic of the latter. Gmelin ventures to remove it from A. Lupus, because it is marked with transverse bands of brown, a character which we suspect prevails in a greater, or less degree, throughout the whole of the Linnæan kind, although it is not specifically noticed. Gmelin is, indeed, uncertain whether he should deem it a distinct species, or a variety only: had he attended to the synonymous writers he quotes himself under this article, he would have found that some of them mention those very bands which he considers as the specific distinction of his *Strigosus:* in the figure of Block in particular they are very distinct, and yet Gmelin admits this as the Linnæan A. Lupus. But one circumstance respecting the Gmelinian synonyms is still more remarkable: they refer to the same figure and description in the British Zoology for his *A. Lupus* and *A. Strigosus,* so that in the first instance Gmelin admits it without hesitation as the true Linnæan A. Lupus, and in the following page makes it a new species, with a query ;—one of these might surely have been omitted with propriety.

All the specimens we have seen of this fish were striped in the same manner as that which is here represented. Mr. Pennant says, " in different fish these stripes have different appearances ;" but he does not add that he has ever seen them without. The authority of Mülleri, in his *Zool. Dan.* on the contrary, might lead us to suspect that the striped kind was a distinct fish from Lupus, for he expressly describes an immaculate kind, " Anarhichas Lupus non maculatus" perhaps to distinguish it from the former, or more probably from A. Pantherinus, the body of which is marked all over with brown

spots, of a rounded shape; and it also inhabits the North Sea, as well as the other species.

Block, who describes the striped kind as A. Lupus, and another the *minor* of *O. Fabricius* and Gmelin, thinks the substance of which the teeth are composed may furnish a sufficient criterion of both, the former being bony, and the latter cartilaginous.

Upon the whole, we are inclined to admit the striped kind as a variety of the Linnæan species Lupus, under an idea that it is not so far distinct as to constitute a different species; but after attending with some degree of accuracy to the synonyms quoted for the former, we may rather suspect that Linnæus either did not consider the transverse stripes of sufficient consequence to be included in the specific character, or that they were accidentally wanting in the specimen he described.

The Wolf Fish grows upon the coasts about the southern parts of Britain, to the length of three or four feet: in the seas about the islands in the remote parts of Scotland, they are sometimes taken above twice that size. Gmelin, Gronovius, and others, say they even encrease upon the coasts of Greenland, and other places in the North Seas, to the prodigious length of fifteen feet.

It feeds almost entirely on shell fish and crustaceous animals, which it grinds to pieces with its teeth, and swallows shells and all. Nothing can be better adapted for this purpose than the substance, construction, and disposition of its teeth in the jaws; those in front, as the character of the genera implies, are strong, conic, divergent, and usually about six in number: these are supported within by a

row of smaller teeth, which in the upper jaw makes the whole amount to about eighteen, and in the lower one to twelve: the grinding teeth join to the canine teeth in the lower jaw, but in the upper one are separated from them; and in the centre are two rows of strong flat teeth, fixed upon an oblong basis, upon the bones of the palate and the nose. These grinding teeth, or some resembling them, are sometimes found in a fossil state, and are called cramp stones, bufonites, and toad stones, and were formerly supposed to possess many secret virtues, for which reason they were set in gold, and worn upon rings, &c.

This is a fierce and most voracious fish, and it requires both caution and address to escape its fury when taken. Schonevelde relates, that its bite is so hard that it will seize an anchor, and leave the marks of its teeth in it; and the Danish and German names of *Steenbider* and *Steinbeisser*, express the sense of its great strength, as if it were capable of crushing even stones with its jaws. The fishermen therefore endeavour, as soon as possible, to beat out its fore teeth, and then kill it by striking it behind the head*.

It is sometimes taken with a hook and line, and sometimes by spearing; the latter mode of capture is successfully practised by the Norwegians, who use a kind of trident for the purpose, and when they observe the Wolf Fish prowling about the shore in search of lobsters and shell fish, can take them by that means with little difficulty. The Greenlanders eat the flesh raw, and make bags and other articles of the skin. The aspect of this creature is so truly hideous, that it is no matter of surprize it is seldom eaten in England,

* Pennant.

except by the fishermen; and they take the head and skin off before it is boiled. The smell, when raw, is peculiarly sickly; but we once overcame our prejudice so far as to taste the flesh of it when dressed, with fennel, parsley, and butter, and must say it was delicious: it was entirely divested of every unpleasant odour, the appearance was delicate, like that of mackarel, and the flavour not unlike it, though in our opinion it was far superior.

The Wolf Fish approaches the shore in the months of May and June, and deposits the spawn upon the leaves of marine plants. The young, according to Mr. Pennant, are of a greenish cast, resembling the sea wrack, amongst which they reside for some time after their birth.

# INDEX TO VOL. I.

OF THE

## *BRITISH FISHES;*

ACCORDING TO

THE LINNÆAN SYSTEMA NATURÆ.

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### ** JUGULARES.



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# ALPHABETICAL INDEX TO VOL. I.

OF

## *BRITISH FISHES.*



END OF VOL. I.

Printed by Bye and Law, St. John's-Square, Clerkenwell.

Donovan, Edward, 1768-1837

The natural history of British fishes including scientific and general descriptions of the most interesting species and an extensive selection of accurately finished coloured plates, taken entirely from original drawings, purposely made from the specimens in a recent state, and for the most
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